



Consortium for the Application of Space Data to Education: Year Two¹

Abstract

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The Consortium for the Application of Space Data to Education (CASDE) was created to utilize NASA's legacy of data, information, and technology to stimulate and challenge, students in the acquisition and use of scientific, mathematical, and other skills at the K-12 level. Extensions and spin-offs that provide resources, services, and tools to post secondary students and to individuals involved in resource planning and management are being explored and developed.

We have established a consortium to provide technical services, to organize, enhance, and disseminate remotely sensed data and analytical tools to educators, resource managers, and other interested parties. Beginning with existing data sets and data-analysis and manipulation tools, CASDE is: (1) cataloging and categorizing selected data from NASA and other sources in a manner that facilitates access by educators, students, resource managers, conservationists, and others; (2) making available data-visualization techniques developed at the Jet Propulsion Laboratory, Goddard Space Flight Center, and other public domain sources, and demonstrating their applicability to and fostering their use in science education, other classroom-subject areas, and natural-resources assessment; (3) working with educators and resource managers to create study units, training modules, and other educational resources, following methodologies developed by Johns Hopkins [University Institute for the Academic Advancement of Youth (JIAU/IAAY)] which can be readily incorporated into existing curricula, self-learning packages, and applications-training courses; (4) creating a center to host, provide access to, and disseminate these materials via Internet, or through distribution of CD-ROM media; (5) creating a standard, user-friendly interface based upon Netscape, which is uniform across all products and holdings of the center; (6) integrating all products to facilitate a transparent-to-the-user transition from local to remote resource access; and (7) under the counsel and leadership of professional education evaluators, identifying, measuring, and reporting the impact of CASDE activities upon target audiences and use this information to update and improve those activities.

During the first year, the CASDE team developed the concept of "Virtual America" that has become the project's organizing and integrating concept. Virtual America includes a) images acquired by satellites and aircraft, b) educational resources such as guides, sample

lessons, data and image descriptions, etc., c) analysis and demonstration tools, and d) methods and standards for labeling, cataloging and archiving.

The first component, Virtual Nebraska, is an easily accessible archive of digital aerial photography and other remotely sensed data that educators, students, and resource managers can exploit via the worldwide web and CD-ROM. Virtual Nebraska is available on line is under continuous development and enhancement by the staff at the University of Nebraska — Lincoln working with Nebraska high school students and teachers. (Virtual Nebraska maybe accessed through URL: <http://www.casde.unl.edu>.) The next example, Virtual California, will follow the same process at JPL, with students and teachers from the Pasadena pilot schools. Schools and institutions in other states will be invited to develop their own “virtual states.” CASDE’s standards and methods will provide the technical guidance to ensure an integrated, seamless, and cohesive set of data, tools, and interfaces. It is our goal to have nationwide distributed data sets and educational resources encompassing the entire US.

During the first year, it was decided to move away from completely packaged lessons and guides and to move toward *CASDE Educational Building Blocks*. Building blocks will include data and tool resources, guidance as to their application, and other pertinent information. They will be designed to be incorporated by educators into curricula as enhancements and enablers. We believe that providing resources at this level of granularity will foster the use of CASDE products in teaching a large variety of subjects.

Two major technology developments were begun during the first year. The Remote Renderer is online in prototype form. This tool makes high-end computer visualization of satellite imagery available to the educational community. Users can create three dimensional “fly y-overs” of satellite imagery. By moving from a nadir projection to one more common to students, satellite imagery comes alive and relevant.

The second technology development is DataSlate. DataSlate allows users to quickly explore visual data. Various tools will be available to enhance images, view scenes in various wavelengths and to explore the same scene simultaneously in two or more data sets (wavelength, projection, etc.).

This paper will highlight and demonstrate the first products of CASDE.

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